PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

Application No.:	10/643,061
Filing Date:	08/18/03
Applicant:	Mathias et al.
Group Art Unit:	1795
Examiner:	Helen Chu
Title:	DIFFUSION MEDIA FOR USE IN A PEM FUEL CELL
Attorney Docket:	8540G-000091 (GP-301332)

Director of the United States Patent and Trademark Office
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Reply Brief Under 37 C.F.R. § 41.41

Sir:

In response to the Examiner's Answer having a notification date of October 18, 2007, Appellants file this Reply Brief.

1. Response to the Examiner's Answer regarding the Rejection Under 35 U.S.C. § 102

Appellants submit the following reply to the Examiner's remarks in Section (10) A), located on pages 8 to 11 of the Examiner's Answer. The Examiner's argument is misapplying the established practice of transitional phrases in claim drafting and is further misconstruing the use of terms in both Applicants' disclosure and the Denton reference as well as the plain meaning of these terms.

The Examiner's reasoning is misapplying established claim drafting practices regarding transitional phrases. On page 8, the Examiner states:

> The term "comprising" in claim 1 means to have limitation of the claimed language and in addition to. Though the claimed recitation requires that the lateral axis has to be flexible and the transverse axis has to be rigid, there are no limitations that lateral axis cannot also be rigid and the transverse axis cannot also be flexible.

The above statement is simply a non sequitur – a claimed feature cannot be made to exhibit antithetical properties by addition of unclaimed features. Claim 1 is drawn to a PEM fuel cell comprising a membrane electrode assembly including "permeable diffusion media being rigid along a transverse axis" and "flexible along a lateral axis." "'Comprising' is a term of art used in claim language which means that *the named elements are essential*, but other elements may be added and still form a construct within the scope of the claim." *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) (emphasis added). Thus, being rigid along a transverse axis and flexible along a lateral axis *are essential* to the present claims, and while other features may be added by use of the open-ended transition "comprising," such additional features cannot contravene the essential recited elements of the claim.

The permeable diffusion media of claim 1 cannot be simultaneously rigid and flexible along the transverse axis, or simultaneously flexible and rigid along the lateral axis as proposed by the Examiner.

The meanings of the terms "rigid" and "flexible" are clear in view of the present specification. It is established a claim term may be defined by implication and usage of the term in the context in the specification. See *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc). In this case, Applicants' specification identifies that the permeable diffusion media 32a, 32b is rigid along a transverse axis and flexible along a lateral axis. Page 3, lines 20-23. The specification further describes the diffusion media as easily rollable along the flexible lateral axis (i.e., the y-direction) to facilitate manufacture and transportation. Page 8, line 15 to page 9, line 13 and page 10, line 27 to page 13, line 5. On the other hand, the diffusion media will not impinge or tent into the flow channels 20 along the rigid transverse axis (i.e., the x-direction). Page 8, line 41 to page 9, line 13; Fig. 3.

The descriptors "rigid" and "flexible" are therefore not coextensive and in fact are antonyms as used in Applicants' specification. In addition, the plain meanings of these terms, according to Webster's Third New International Dictionary, unabridged (Merriam-Webster, Inc. 1993) are:

> rigid (*adj*): very firm rather than plain in composition or structure : lacking or devoid of flexibility : inflexible in nature : hard.
>
> flexible (*adj*): capable of being flexed : capable of being turned, bowed, or twisted without breaking : pliable.

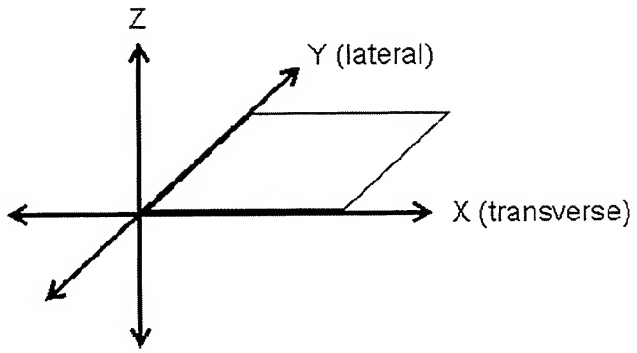
Thus, the claimed diffusion media, even in the open-ended "comprising" context, cannot simultaneously be made to exhibit two contradictory properties along the same axis.

The Examiner's reasoning is also contrary to the use of the terms "flexible" and "dimensionally stable" in the Denton reference. Again, the specification is the starting point for interpretation of these terms. The Denton specification describes "highly flexible" electrodes that overcome problems with rigid electrodes. Denton col. 3, lines 7-9; and col. 4, lines 32-35; col. 2, lines 50-55; col. 3, lines 6-9; col. 6, lines 22-29. However, Denton's use of "dimensionally stable" does not equate to "rigid." Denton uses the term "dimensionally stable" to mean a diffusion media that is not stretchable, and which resists planar dimensional change (in the x and y directions) due to stretching. Denton col. 4, lines 32-35; col. 3, lines 7- 9; col. 2, lines 56-60. As such, Denton identifies "flexibility" and "dimensional stability" as two properties of its diffusion media that are advantageous compared to rigid and stretchable conventional electrodes. Denton's property of dimensional stability therefore has nothing to do with rigidity.

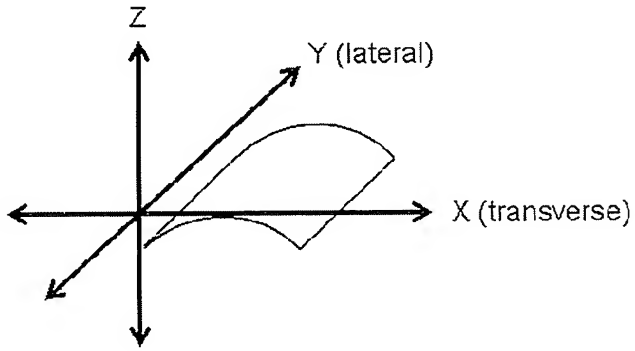
In addition, nowhere does Denton identify or associate any directionality with the highly flexible nature of the gas diffusion electrode. The electrode appears to be highly flexible regardless of axis and orientation. In particular, Denton is silent regarding any orientation of flexibility or rigidity relative to the transverse or lateral axis of the electrode and an associated flow field, as compared to the relationship found in the present claims where the rigid transverse axis expressly crosses first channels of the flow field.

As best can be ascertained, the Examiner's argument is predicated on a misunderstanding of the spatial relationships in Applicants' disclosure and the Denton reference. Taking the illustrative three-dimensional axes shown in Figure 2, where the

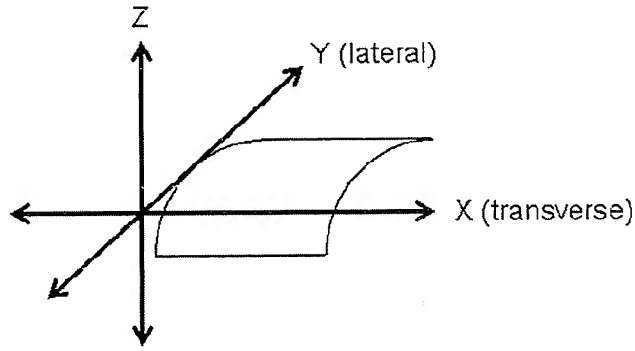
x-axis is the transverse axis and the y-axis is the lateral axis, the diffusion media would lie in the x-y plane as shown:



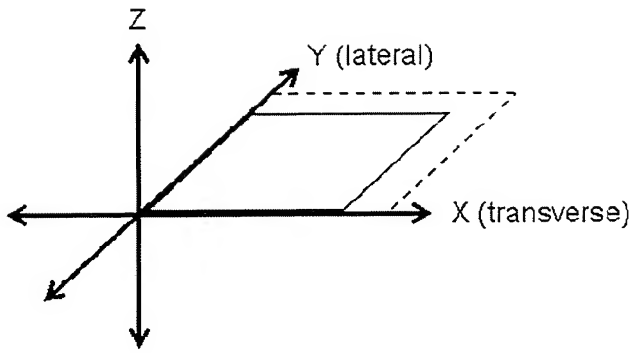
If the diffusion media was to flex along the transverse axis (cannot happen in the present claims), it may appear as:



If the planar diffusion media was to flex along the lateral axis, it may appear as:



In addition, stretching of the diffusion media in the x-y plane would simply expand the x and/or y dimensions as shown by the expanded stippled sheet:



As described, the present claims include a permeable diffusion media that is rigid along the transverse axis and flexible along the lateral axis. Whereas, the Denton electrode is highly flexible regardless of axis and is dimensionally stable so that it does not stretch. That is, Denton is describing an electrode with properties different from the claimed permeable diffusion media and does not teach rigidity along a transverse axis, much less orienting the rigid character / transverse axis so that it crosses first channels of the flow field, the channels defining a predominate flow direction.

Appellants submit that the rejection should be REVERSED.

CONCLUSION

The present claims are patentable over the cited art. Appellants, therefore, respectfully petition this Honorable Board to reverse the final rejection of the claims on each ground and to indicate that all claims are allowable.

Respectfully submitted,

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